OPTIMIZATION OF EIRP VIA EFFICIENT
REDUNDANCY POLLING CONCEPTS

ABSTRACT OF THE DISCLOSURE

A communications satellite has multiple HPA redundancy pools. All downlink feed signals driven by HPAs in any one of the HPA redundancy pools are placed on a first number of antenna apertures which is less than the total number of available antenna apertures and, in the event that a HPA driving a downlink feed signal fails, only one of the other HPAs co-located in that same HPA redundancy pool may drive that downlink feed signal. Each one of the HPA redundancy pools provides downlink feed signals to the same number, but a different unique combination, of antenna apertures and is located so that the waveguide run length between it and the furthest antenna aperture in the unique combination of antenna apertures containing downlink feed signals provided by it is minimized.